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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,626	10/23/2003	Robert J. Small	060937-217-US	5914
<div>7590 06/20/2007 MORGAN, LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE, N.W. WASHINGTON, DC 20004</div>			<div>EXAMINER CHEN, KIN CHAN</div>	
			<div>ART UNIT 1765</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 06/20/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/690,626

Applicant(s)

SMALL ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 22 and April 30, 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9, 11, 12, 14, 15 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-7, 9, 11, 12, 14, 15, 22-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2-7, 9, 11,12, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "the chelating compounds" in lines 8-9. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the chelator particle" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites both chelator compounds and chelating compounds, it is unclear how to differentiate these two compounds.

Claim 14 recites both chelator particle and chelating particle, it is unclear how to differentiate these two particles.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US 2003/0017785; hereinafter "Ueda") in view of Wieserman et al. (US 4,904,634).

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or sets forth the intended use of a structure. Therefore, the preamble in the claims reciting polishing, etching, and/or residue removing (or chemical mechanical polishing) is treated as a statement of intended use for a slurry composition and not as a limitation.

In a method and composition for polishing, Ueda teaches that a polishing slurry may comprise a polishing accelerator [0031], a diluent, an abrasive material, and plurality of chelating particles that are insoluble in the diluent. The chelating particles may comprise a particle and a plurality of chelator compounds attached to the surface. The chelating particles have a net negative zeta potential. See [0008], [0018], [0023], [0027], [0031], [0033], [0039].

Unlike the claimed invention, Ueda does not disclose that the chelating compounds may be attached to a spacer, which is different than the chelating compounds and different than the particle. Wieserman teaches that the active material may be used as spacer molecules (col. 4, lines 4-5). Wieserman also teaches that it may be applied for metal chelating agent (col. 4, line 35). The spacer may be an organic molecule comprising a monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-

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40; col. 6, lines 50-65. Hence, it would have been obvious to one with ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches that it may be used as a spacer and for metal chelating agent application. Furthermore, since same type of material is used (e.g., the spacer may be an organic molecule comprising a monomer or oligomer, col. 4, lines 35-40; col. 6, lines 50-65), hence, it would have been obvious to one with ordinary skill in the art that it would have same function and effect (such as "a space", attached by a covalent bond to the chelator compound) as instantly claimed.

Dependant claim 5 differs from the prior art by specifying various sizes and dimensions. Because same are merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various dimensions and a plurality of for fabricating a semiconductor device in order to accommodate the specific product design and meet the product requirement.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 6,7, 9, 11,12, 15, and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US 2003/0017785; hereinafter "Ueda") in view of Wieserman et al. (US 4,904,634) and Obanawa et al. (US 4,732,887).

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or sets forth the intended use of a structure.

Therefore, the preamble in the claims reciting polishing, etching, and/or residue removing (or chemical mechanical polishing) is treated as a statement of intended use for a slurry composition and not as a limitation.

In a method and composition for polishing, Ueda teaches that a polishing slurry may comprise a polishing accelerator [0031], a diluent, an abrasive material, and plurality of chelating particles that are insoluble in the diluent. The chelating particles may comprise a particle and a plurality of chelator compounds attached to the surface. The chelating particles have a net negative zeta potential. See [0008], [0018], [0023], [0027], [0031], [0033], [0039].

Unlike the claimed invention, Ueda does not disclose that the chelating compounds may be attached to a spacer, which is different than the chelating compounds and different than the particle. Wieserman teaches that the active material may be used as spacer molecules (col. 4, lines 4-5). Wieserman also teaches that it may be applied for metal chelating agent (col. 4, line35). The spacer may be an organic molecule comprising a monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-40; col. 6, lines 50-65. Hence, it would have been obvious to one with ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda

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because Wieserman teaches that it may be used as a spacer and for metal chelating agent application. Furthermore, since same type of material is used (e.g., the spacer may be an organic molecule comprising a monomer or oligomer, col. 4, lines 35-40; col. 6, lines 50-65), hence, it would have been obvious to one with ordinary skill in the art that it would have same function and effect (such as "a space", attached by a covalent bond to the chelator compound) as instantly claimed.

Unlike the claimed invention, the combined Ueda and Wieserman does not teach the chelating particle may comprise a metal oxide abrasive and a plurality of chelator compounds recited in instant claims. In a method for forming composite chelating particles, Obanawa teaches that the chelating particle may comprise a metal oxide abrasive and a plurality of chelator compounds and it can advantageously be used as an adsorbent. See abstract; col. 4, lines 23-30; col. 9, lines 62-68; col. 10, lines 1-22; col. 11, lines 23-45. Hence, it would have been obvious to one with ordinary skill in the art to modify the combined Ueda and Wieserman by using the composite chelating particles as taught by Obanawa in order to efficiently chelate (or adsorb) the metallic residues.

As to dependent claim 2, see col. 4, lines 23-30 of Obanawa.

As to dependent claims 6 and 7, see col. 9, lines 62-68 and col. 10, lines 1-22 of Obanawa. Claims 6 and 15 specify that at least a portion of the functional groups is no further than about 7 angstroms from another functional group. Since the compound is used as a chelating agent, it is expected that the distance between two functional groups are adjusted so as to efficiently chelate the metallic residues depending on the

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product requirement, therefore, it is merely a matter of choice of design depending on the product requirement. As to dependent claims 22 and 23, since same material and composition are disclosed in the prior art, the limitation of "attached by a covalent chemical bond" would have been expected.

As to dependent claim 11 specifies that the spacer comprises at least about 10 carbon atom linkages. Because same is merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various sizes of polymer chain (carbon atom linkages) in order to accommodate the specific chelating agent and meet the product requirement.

As to claim 24, since the prior art contains same function group of polymer as instant claims, the covalent chemical bond between the spacer and the particle would have been expected.

Dependent claim 22 differs from the combined prior art by specifying well-known features (such as chelating compound having at least three sulfonic acid groups) to the art of polishing and wet etching, the examiner takes official notice. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the combined prior art by adding any of same well-known features to same in order to efficiently chelate the metallic residues with a reasonable expectation of success. It is noted that applicant did not traverse the aforementioned conventionality (e.g., well-known features or common knowledge), which have been stated in the previous office action (March 6, 2006), MPEP 2144.03.

Dependant claims 25 and 28 differ from the prior art by specifying various sizes and dimensions. Because same are merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various dimensions and a plurality of for fabricating a semiconductor device in order to accommodate the specific product design and meet the product requirement.

As to dependent claim 27, Ueda teaches that the slurry may comprise a plurality of abrasive particles, see [0028], last two lines.

Response to Arguments

6. Applicant's arguments filed January 22, 2007 have been fully considered but they are not persuasive.

Applicant has argued that neither Ueda nor Wieserman teaches or suggests that the chelator compounds are attached to a space. It is not persuasive. As has been stated in the office action, Ueda teaches that a polishing slurry may comprise plurality of chelating particles. The chelating particles may comprise a particle and a plurality of chelator compounds attached to the surface. Wieserman teaches that the active material may be used as spacer molecules (col. 4, lines 4-5). Wieserman also teaches that it may be applied for metal chelating agent (col. 4, line 35). The spacer may be an organic molecule comprising a monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-40; col. 6, lines 50-65. Hence, it would have been obvious to one with

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ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda.

Applicant has argued that no motivation or suggestion in Wieserman and Ueda. It is not persuasive. As stated in the office action, Wieserman teaches that the active material may be used as spacer molecules (col. 4, lines 4-5). Wieserman also teaches that it may be applied for metal chelating agent (col. 4, line 35). The spacer may be an organic molecule comprising a monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-40; col. 6, lines 50-65. Hence, it would have been obvious to one with ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches that it may be used as a spacer and for metal chelating agent application.

Applicant has argued that Wieserman does not address the problem of improved chemical mechanical polishing composition. It is not persuasive. As has been stated in the office action, A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or sets forth the intended use of a structure. Therefore, the preamble in the claims reciting polishing, etching, and/or residue removing (or chemical mechanical polishing) is treated as a statement of intended use for a slurry composition and not as a limitation.

Applicant has argued that the combined prior art does not teach a chelator compound attached by a covalent bond to the spacer molecule. It is not persuasive. As has been stated in the office action, since same type of material is used (e.g., the spacer may be an organic molecule comprising a monomer or oligomer, col. 4, lines 35-

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40; col. 6, lines 50-65), hence, it would have been obvious to one with ordinary skill in the art that it would have same function and effect (such as "a space", attached by a covalent bond to the chelator compound) as instantly claimed.

Conclusion

7. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

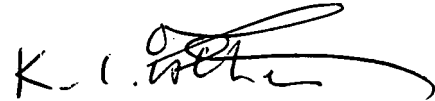
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent

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June 19, 2007



Kin-Chan Chen
Primary Examiner
Art Unit 1765